AMENDMENT TO THE CLAIMS

Listing of claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Original) A wireless communication apparatus comprising:

a modulation circuit that generates a plurality of data signals containing identical data each in one of a plurality of carrier frequency bands; and

a plurality of antennas via which the plurality of data signals outputted from the modulation circuit are transmitted each in a corresponding one of the plurality of carrier frequency bands.

2. (Original) The wireless communication apparatus according to claim 1, wherein the modulation circuit comprises:

a modulator that generates a baseband signal by modulating the data by a predetermined modulation method; and

a plurality of frequency converters that convert the baseband signal generated by the modulator respectively into the data signals in the corresponding carrier frequency bands.

3. (Original) The wireless communication apparatus according to claim 2, wherein the predetermined modulation method used by the modulator is an OFDM method.

4. (Original) A wireless communication apparatus, comprising:

a plurality of antennas via which are received data signals each transmitted in one of a plurality of carrier frequency bands;

a plurality of frequency conversion circuits that convert the data signals received respectively via the plurality of antennas into a plurality of baseband signals having an identical frequency; and

a demodulation circuit that, based on the plurality of baseband signals obtained respectively from the plurality of frequency conversion circuits, checks reception condition in the carrier frequency bands corresponding respectively to the plurality of data signals and selects the baseband signal obtained from the data signal in the carrier frequency band in which reception condition is found best and that then demodulates the thus selected baseband signal,

wherein the data signals transmitted respectively in the plurality of carrier frequency bands contain identical data.

5. (Original) The wireless communication apparatus according to claim 4,

wherein, when a data signal is being transmitted only in one carrier frequency band, the modulation circuit demodulates a corresponding baseband signal without selecting from a plurality of baseband signals.

6. (Original) A wireless communication apparatus comprising:

a plurality of antennas via which are received data signals each transmitted in one of a plurality of carrier frequency bands;

a plurality of frequency conversion circuits that convert the data signals received respectively via the plurality of antennas into a plurality of baseband signals having an identical frequency; and

a demodulation circuit that synthesizes together the plurality of baseband signals obtained respectively from the plurality of frequency conversion circuits into a single baseband signal and that then demodulates the thus synthesized baseband signal;

wherein the data signals transmitted respectively in the plurality of carrier frequency bands contain identical data.

7. (Original) The wireless communication apparatus according to claim 6, wherein, when a data signal is being transmitted only in one carrier frequency band, the modulation circuit demodulates a corresponding baseband signal without synthesizing together a plurality of baseband signals.

8. (Original) A wireless communication apparatus comprising:

n (where *n* is an integer equal to or greater than 2) antennas via which are received data signals modulated by an OFDM modulation method and transmitted in *n* carrier frequency bands;

n frequency conversion circuits that convert the data signals received respectively via the *n* antennas into baseband signals having an identical frequency;

n Fourier transform circuits that, based on the plurality of baseband signals obtained respectively from the *n* frequency conversion circuits, generate parallel data

containing data segments each relating to one of *m* (where *m* is an integer equal to or greater than 2) subcarriers;

n data correction circuits that, based on the parallel data fed respectively from the *n* Fourier transform circuits, check reception condition of each of the *m* subcarriers in the respective carrier frequency bands and accordingly correct the parallel data;

a data selection circuit that receives the *n* sets of parallel data corrected by the *n* data correction circuits and that then, for each of the *m* subcarriers, recognizes the carrier frequency band in which reception condition is best and that then selects the data in the thus recognized carrier frequency band so as to thereby newly generate parallel data containing *m* data segments; and

a demodulation circuit that converts the parallel data newly generated by the data selection circuit into serial data,

wherein the parallel data contained in the data signals transmitted respectively in the plurality of carrier frequency bands contains identical data.

9. (Original) The wireless communication apparatus according to claim 8,

wherein the demodulation circuit demodulates parallel data selected from $n + 1$ sets of parallel data including the parallel data corrected by the *n* data correction circuits and the parallel data newly generated by the data selection circuit.

10. (Original) The wireless communication apparatus according to claim 9, further comprising:

a carrier detector that, based on the parallel data corrected respectively by the *n* data correction circuits, checks reception condition in the *n* carrier frequency bands to recognize an unused one of the carrier frequency bands; and

an ON/OFF control circuit that turns off, among the *n* data correction circuits, the data correction circuit that corrects the parallel data corresponding to the data signal in the carrier frequency band recognized as being unused by the carrier detector and that, when only one of the carrier frequency band is recognized as being used, turns off the data selection circuit.

11. (Original) A wireless communication apparatus comprising:

n (where *n* is an integer equal to or greater than 2) antennas via which are received data signals modulated by an OFDM modulation method and transmitted in *n* carrier frequency bands;

n frequency conversion circuits that convert the data signals received respectively via the *n* antennas into baseband signals having an identical frequency;

n Fourier transform circuits that, based on the plurality of baseband signals obtained respectively from the *n* frequency conversion circuits, generate parallel data containing data segments each relating to one of *m* (where *m* is an integer equal to or greater than 2) subcarriers;

n data correction circuits that, based on the parallel data fed respectively from the *n* Fourier transform circuits, check reception condition of each of the *m* subcarriers in the respective carrier frequency bands and accordingly correct the parallel data;

a data synthesis circuit that receives the *n* sets of parallel data corrected by the *n* data correction circuits and that then, for each of the *m* subcarriers, synthesizes the data so as to thereby newly generate parallel data containing *m* data segments; and

a demodulation circuit that converts the parallel data newly generated by the data synthesis circuit into serial data,

wherein the parallel data contained in the data signals transmitted respectively in the plurality of carrier frequency bands contains identical data.

12. (Original) The wireless communication apparatus according to claim 11,

wherein the demodulation circuit demodulates parallel data selected from *n* + 1 sets of parallel data including the parallel data corrected by the *n* data correction circuits and the parallel data newly generated by the data synthesis circuit.

13. (Original) The wireless communication apparatus according to claim 12, further comprising:

a carrier detector that, based on the parallel data corrected respectively by the *n* data correction circuits, checks reception condition in the *n* carrier frequency bands to recognize an unused one of the carrier frequency bands; and

an ON/OFF control circuit that turns off, among the *n* data correction circuits, the data correction circuit that corrects the parallel data corresponding to the data signal in the carrier frequency band recognized as being unused by the carrier detector and that, when only one of the carrier frequency band is recognized as being used, turns off the data synthesis circuit.

14. (Original) A wireless communication apparatus comprising:

n (where *n* is an integer equal to or greater than 2) antennas via which are received data signals modulated by an OFDM modulation method and transmitted in *n* carrier frequency bands;

n frequency conversion circuits that convert the data signals received respectively via the *n* antennas into baseband signals having an identical frequency;

n Fourier transform circuits that, based on the plurality of baseband signals obtained respectively from the *n* frequency conversion circuits, generate parallel data containing data segments each relating to one of *m* (where *m* is an integer equal to or greater than 2) subcarriers;

a data selection circuit that receives the *n* sets of parallel data obtained from the *n* Fourier transform circuits and that then, for each of the *m* subcarriers, recognizes the carrier frequency band in which reception condition is best and that then selects the data in the thus recognized carrier frequency band so as to thereby newly generate parallel data containing *m* data segments;

a data correction circuit that, based on the parallel data newly generated by the data selection circuit, checks reception condition of each of the *m* subcarriers in the respective carrier frequency bands and accordingly correct the parallel data; and

a demodulation circuit that converts the parallel data corrected by the data correction circuit into serial data,

wherein the parallel data contained in the data signals transmitted respectively in the plurality of carrier frequency bands contains identical data.

15. (Currently Amended) A wireless communication system comprising:

a data transmission apparatus built with ~~the~~ a wireless communication apparatus ~~according to claim 1~~ that comprises:

a modulation circuit that generates a plurality of data signals containing identical data each in one of a plurality of carrier frequency bands, and

a plurality of antennas via which the plurality of data signals outputted from the modulation circuit are transmitted each in a corresponding one of the plurality of carrier frequency bands; and

a data reception apparatus built with the wireless communication apparatus ~~according to claim 4~~ that comprises:

a plurality of antennas which receive data signals each transmitted in one of a plurality of carrier frequency bands,

a plurality of frequency conversion circuits that convert the data signals received respectively via the plurality of antennas into a plurality of baseband signals having an identical frequency, and

a demodulation circuit that, based on the plurality of baseband signals obtained respectively from the plurality of frequency conversion circuits, checks reception condition in the carrier frequency bands corresponding respectively to the plurality of data signals and selects the baseband signal obtained from the data signal in the carrier frequency band in which reception condition is found best and that then demodulates the thus selected baseband signal,

wherein a plurality of data signals containing identical data are transmitted and received in the plurality of carrier frequency bands.

16. (Currently Amended) A wireless communication system comprising:

a data transmission apparatus built with the wireless communication apparatus ~~according to claim 1~~ that comprises:

a modulation circuit that generates a plurality of data signals containing identical data each in one of a plurality of carrier frequency bands, and

a plurality of antennas via which the plurality of data signals outputted from the modulation circuit are transmitted each in a corresponding one of the plurality of carrier frequency bands; and

a data reception apparatus built with the wireless communication apparatus ~~according to claim 6~~ that comprises:

a plurality of antennas which receive data signals each transmitted in one of a plurality of carrier frequency bands,

a plurality of frequency conversion circuits that convert the data signals received respectively via the plurality of antennas into a plurality of baseband signals having an identical frequency, and

a demodulation circuit that synthesizes together the plurality of baseband signals obtained respectively from the plurality of frequency conversion circuits into a single baseband signal and that then demodulates the thus synthesized baseband signal,

wherein a plurality of data signals containing identical data are transmitted and received in the plurality of carrier frequency bands.

17. (Currently Amended) A wireless communication system comprising:

a data transmission apparatus built with the wireless communication apparatus ~~according to claim 3~~ that comprises:

a predetermined modulation method, used by the modulator, that is an OFDM method; and

a data reception apparatus built with the wireless communication apparatus ~~according to claim 8~~ that comprises:

n (where *n* is an integer equal to or greater than 2) antennas which receive data signals modulated by an OFDM modulation method and transmitted in *n* carrier frequency bands,

n frequency conversion circuits that convert the data signals received respectively via the *n* antennas into baseband signals having an identical frequency,

n Fourier transform circuits that, based on the plurality of baseband signals obtained respectively from the *n* frequency conversion circuits, generate parallel data containing data segments each relating to one of *m* (where *m* is an integer equal to or greater than 2) subcarriers,

n data correction circuits that, based on the parallel data fed respectively from the *n* Fourier transform circuits, check reception condition of each of the *m* subcarriers in the respective carrier frequency bands and accordingly correct the parallel data,

a data selection circuit that receives the *n* sets of parallel data corrected by the *n* data correction circuits and that then, for each of the *m* subcarriers, recognizes the carrier frequency band in which reception condition is best and that then selects the

data in the thus recognized carrier frequency band so as to thereby newly generate parallel data containing *m* data segments, and

a demodulation circuit that converts the parallel data newly generated by the data selection circuit into serial data,

wherein a plurality of data signals containing identical data are transmitted and received in the plurality of carrier frequency bands.

18. (Currently Amended) A wireless communication system comprising:

a data transmission apparatus built with the wireless communication apparatus ~~according to claim 3~~ that comprises:

a predetermined modulation method, used by the modulator, that is an OFDM method; and

a data reception apparatus built with the wireless communication apparatus ~~according to claim 11~~ that comprises:

n (where *n* is an integer equal to or greater than 2) antennas which receive data signals modulated by an OFDM modulation method and transmitted in *n* carrier frequency bands,

n frequency conversion circuits that convert the data signals received respectively via the *n* antennas into baseband signals having an identical frequency,

n Fourier transform circuits that, based on the plurality of baseband signals obtained respectively from the *n* frequency conversion circuits, generate parallel data containing data segments each relating to one of *m* (where *m* is an integer equal to or greater than 2) subcarriers,

n data correction circuits that, based on the parallel data fed respectively from the *n* Fourier transform circuits, check reception condition of each of the *m* subcarriers in the respective carrier frequency bands and accordingly correct the parallel data,

a data synthesis circuit that receives the *n* sets of parallel data corrected by the *n* data correction circuits and that then, for each of the *m* subcarriers, synthesizes the data so as to thereby newly generate parallel data containing *m* data segments, and

a demodulation circuit that converts the parallel data newly generated by the data synthesis circuit into serial data,

wherein a plurality of data signals containing identical data are transmitted and received in the plurality of carrier frequency bands.

19. (Currently Amended) A wireless communication system comprising:

a data transmission apparatus built with the wireless communication apparatus ~~according to claim 3~~ that comprises:

a predetermined modulation method, used by the modulator, that is an OFDM method; and

a data reception apparatus built with the wireless communication apparatus ~~according to claim 14~~ that comprises:

n (where *n* is an integer equal to or greater than 2) antennas via which are received data signals modulated by an OFDM modulation method and transmitted in *n* carrier frequency bands,

n frequency conversion circuits that convert the data signals received respectively via the *n* antennas into baseband signals having an identical frequency,

n Fourier transform circuits that, based on the plurality of baseband signals obtained respectively from the *n* frequency conversion circuits, generate parallel data containing data segments each relating to one of *m* (where *m* is an integer equal to or greater than 2) subcarriers,

a data selection circuit that receives the *n* sets of parallel data obtained from the *n* Fourier transform circuits and that then, for each of the *m* subcarriers, recognizes the carrier frequency band in which reception condition is best and that then selects the data in the thus recognized carrier frequency band so as to thereby newly generate parallel data containing *m* data segments,

a data correction circuit that, based on the parallel data newly generated by the data selection circuit, checks reception condition of each of the *m* subcarriers in the respective carrier frequency bands and accordingly correct the parallel data, and

a demodulation circuit that converts the parallel data corrected by the data correction circuit into serial data,

wherein a plurality of data signals containing identical data are transmitted and received in the plurality of carrier frequency bands.